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MONTHLY WEATHER REVIEW

AUGUST 1943

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MONTHLY WEATHER REVIEW

Editor, EDGAR W. WOOLARD

VOL. 71, No. 8
W. B. No. 1399

AUGUST 1943

CLOSED OCTOBER 4, 1943
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METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR AUGUST 1943

[Climate and Crop Weather Division, J. B. KINER, in charge]

AEROLOGICAL OBSERVATIONS

NOTICE.—Effective with the December 1942 issue, the publication of table 1 (RAOB summaries) was discontinued indefinitely.—EDITOR.

TABLE 2.—Free-air resultant winds based on pilot-balloon observations made near 5 p. m. (75th meridian time) during August 1943. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Velocities in meters per second

Altitude (meters) m. s. l.	Abilene, Tex. (538 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (870 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (132 m.)			Charleston, S. C. (17 m.)			Cincinnati, Ohio (152 m.)			Denver, Colo. (1,627 m.)			El Paso, Tex. (1,196 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	31	162	2.4	31	243	2.3	30	278	0.6	31	43	11.7	31	141	0.5	31	325	3.3	31	125	7.3	30	249	3.5	30	244	1.3	29	169	1.2	31	12	0.7	30	72	0.3	31	217	2.6
500.....	31	162	3.9	31	243	2.3	30	278	0.8	31	43	11.7	31	141	0.5	31	325	3.3	31	125	7.3	30	249	3.5	30	244	1.3	29	169	1.2	31	12	0.7	30	72	0.3	31	217	2.6
1,000.....	31	155	4.1	31	243	2.3	30	278	1.3	31	43	11.7	31	141	0.5	31	325	3.3	31	125	7.3	30	249	3.5	30	244	1.3	29	169	1.2	31	12	0.7	30	72	0.3	31	217	2.6
1,500.....	31	162	3.9	31	243	2.3	30	278	1.3	31	43	11.7	31	141	0.5	31	325	3.3	31	125	7.3	30	249	3.5	30	244	1.3	29	169	1.2	31	12	0.7	30	72	0.3	31	217	2.6
2,000.....	31	163	4.2	31	228	2.8	27	334	2.9	31	234	1.6	26	263	3.9	31	274	4.1	26	137	2.5	21	275	7.2	24	271	8.1	22	342	2.3	30	281	5.0	30	44	0.6	31	226	1.2
2,500.....	31	162	2.8	31	227	2.4	27	333	3.1	31	257	3.3	25	277	5.2	31	253	4.2	25	120	2.2	17	284	8.0	19	277	8.6	22	355	3.4	24	285	5.2	30	44	0.6	31	226	1.2
3,000.....	31	173	2.0	31	233	2.8	26	339	3.8	29	259	6.8	25	277	7.3	30	239	6.5	22	91	1.7	14	289	8.3	15	285	8.3	22	3	3.6	21	290	5.9	30	270	0.6	31	126	0.8
4,000.....	30	169	0.4	31	224	3.7	21	335	4.0	27	254	12.2	25	282	13.0	28	232	9.5	21	79	2.3	10	289	9.4	...	...	...	21	10	3.5	17	290	8.3	27	259	4.0	29	158	1.4
5,000.....	29	87	1.5	30	219	3.9	17	324	6.0	26	252	15.3	23	280	15.3	27	232	12.0	20	95	3.9	...	...	...	...	...	17	354	3.9	12	304	9.3	24	256	7.5	27	162	2.4	
6,000.....	26	105	2.0	29	220	4.8	15	334	6.1	24	260	18.8	19	275	18.1	25	232	14.1	18	94	4.6	...	...	...	...	...	15	333	4.5	10	296	12.0	19	257	8.4	21	162	3.9	
8,000.....	22	113	3.3	23	210	8.7	10	326	6.7	19	252	23.3	11	277	24.8	23	236	20.5	...	...	...	...	...	...	...	10	343	4.3	...	...	...	15	253	15.2	19	158	6.2		
10,000.....	18	131	5.1	17	213	10.0	...	...	...	13	252	28.3	...	...	...	16	237	27.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12,000.....	16	121	6.6	11	201	10.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14,000.....	13	128	6.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (573 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (15 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (194 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface.....	31	204	4.6	31	55	0.7	30	171	0.3	30	284	2.1	30	117	2.2	31	219	1.7	31	176	3.2	31	144	1.1	31	311	2.3	30	161	1.3	30	177	0.7	31	299	1.6	31	159	2.1
500.....	31	204	4.6	31	55	0.7	30	171	0.3	30	284	2.1	30	117	2.2	31	219	1.7	31	176	3.2	31	144	1.1	31	311	2.3	30	161	1.3	30	177	0.7	31	299	1.6	31	159	2.1
1,000.....	31	204	4.6	31	55	0.7	30	171	0.3	30	284	2.1	30	117	2.2	31	219	1.7	31	176	3.2	31	144	1.1	31	311	2.3	30	161	1.3	30	177	0.7	31	299	1.6	31	159	2.1
1,500.....	31	204	4.6	31	55	0.7	30	171	0.3	30	284	2.1	30	117	2.2	31	219	1.7	31	176	3.2	31	144	1.1	31	311	2.3	30	161	1.3	30	177	0.7	31	299	1.6	31	159	2.1
2,000.....	31	204	5.1	31	133	1.5	30	306	2.7	30	250	5.6	27	331	2.5	25	275	5.9	31	195	5.0	30	307	2.2	21	340	2.2	25	253	1.4	24	16	2.2	26	308	3.0	25	273	7.7
2,500.....	31	204	5.2	31	221	0.9	29	313	4.1	29	253	6.5	27	326	2.8	24	284	7.2	31	205	4.7	28	314	2.4	30	216	3.1	23	247	1.1	18	20	2.9	26	318	3.3	22	288	9.7
3,000.....	31	206	5.2	31	236	2.8	23	320	5.4	29	252	8.9	26	352	2.0	22	291	7.6	31	215	5.7	28	317	3.0	30	215	3.9	21	235	1.3	16	28	3.0	23	322	4.0	13	306	10.6
4,000.....	30	222	7.0	29	246	5.0	22	325	5.8	23	257	12.7	22	10	2.4	18	301	10.3	29	230	6.4	24	323	4.4	28	242	5.8	11	144	2.3	11	24	3.4	17	326	4.8	...	...	...
5,000.....	27	236	9.4	22	240	6.4	18	328	7.4	19	260	14.6	19	16	2.8	12	304	11.9	23	225	6.8	19	324	5.3	26	254	7.2	10	254	0.6	...	...	...	13	320	7.9			
6,000.....	22	235	11.4	17	238	7.7	17	328	9.5	15	262	15.3	17	13	3.5	...	...	...	23	221	7.8	17	329	5.6	23	255	8.8	...	...	...	17	328	8.1	17	328	8.1			
8,000.....	21	240	16.9	...	...	...	12	307	10.2	...	...	...	13	31	3.9	...	...	...	18	224	12.3	15	333	3.7	17	269	9.4	...	...	...	11	321	10.9	11	321	10.9			
10,000.....	16	237	21.8	...	...	...	10	331	10.2	...	...	...	14	40	7.2	...	...	...	17	223	20.6	13	321	2.7	11	264	8.3	...	...	...	10	333	13.6	...	...	...
12,000.....	14	236	27.4	...	...	...	10	331	10.2	...	...	...	14	44	11.9	...	...	...	16	220	23.9	10	19	2.1	...	...	...	...	...	...	...	...	...	...	...	...	...
14,000.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (402 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (388 m.)			Rapid City S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			St. Paul, Minn. (225 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (15 m.)			Sault Ste. Marie, Mich. (280 m.)			Seattle, Wash. (12 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface.....	31	269	5.9	31	176	4.9	31	137	1.8	31	275	0.8	31	89	0.6	31	209	1.2	31	187	1.3	31	146	3.0	31	267	3.8	31	285	3.8	31	263	2.0	31	236	2.2	31	238	1.2
500.....	31	274	3.0	31	175	5.0	31	147	2.5	31	251	1.2	31	80	0.6	31	220	1.7	31	213	1.2	31	140	4.3	31	259	2.3	31	292	4.8	3	31	238	1.2		
1,000.....	30	258	2.5	31	179	5.2	31	170	3.7	31	233	2.1	31	80	0.6	31	232	1.9	29	229	2.9	31	137	4.0	31	253	0.8	29	295	5.5	31	210	1.9	31	252	1.2			
1,500.....	30	242	2.8	31	188	5.0	31	208	4.8	31	224	2.1	31	166	0.6	31	234	1.9	29	249	4.7	31	140	4.2	31	200	0.9	26	293	5.1	31	219	2.5	31	226	3.6			
2,000.....	30	224	2.6	31	202	4.6	29	237	6.7	31	216	2.9	31	160	0.6	31	234	1.9	29	259	6.8	29	144	3.4	31	178	1.9	25	292	9.2	31	220	2.9	30	218	4.3			
2,500.....	29	233	3.2	31	220	4.2	28	255	8.7	31	215	3.0	30	248	3.5	27	286	5.0	24	271	7.9	28	124	1.9	31	179	2.4	30	293	7.3	18	241	2.5	27	231	5.4			
3,000.....	29	237	4.1	31	227	3.8	28	268	9.4	31	198																												

TABLE 3.—Maximum free-air wind velocities (m. p. s.), for different sections of the United States, based on pilot-balloon observations during August 1943

Section	Surface to 2,500 meters (m. s. l.)				Between 2,500 and 5,000 meters (m. s. l.)				Above 5,000 meters (m. s. l.)						
	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station
Northeast ¹	30.2	sw.	550	14	Nantucket, Mass.	41.4	wnw.	4,620	26	Portland, Maine	62.4	wnw.	11,390	11	Albany, N. Y.
East-Central ²	30.2	w.	1,160	27	Huntington, W. Va.	31.2	wnw.	4,830	16	Elkins, W. Va.	37.6	sw.	10,540	19	Norfolk, Va.
Southeast ³	18.8	ene.	630	19	Charleston, S. C.	17.5	w.	2,730	28	Atlanta, Ga.	45.0	ene.	13,780	14	Key West, Fla.
North-Central ⁴	34.6	sw.	2,280	31	Green Bay, Wis.	40.0	w.	4,350	13	St. Paul, Minn.	71.2	wnw.	8,700	17	Bismarck, N. Dak.
Central ⁵	45.3	sw.	1,600	30	Dodge City, Kans.	34.3	w.	3,150	12	Joliet, Ill.	53.2	nnw.	10,420	1	Fort Wayne, Ind.
South-Central ⁶	35.6	sw.	1,100	12	Texarkana, Ark.	26.0	ne.	4,890	9	Big Spring, Tex.	27.6	eso.	12,750	9	San Antonio, Tex.
Northwest ⁷	37.6	sw.	2,120	7	Havre, Mont.	40.6	nw.	4,920	29	Medford, Oreg.	70.0	sw.	11,260	5	Great Falls, Mont.
West-Central ⁸	31.8	w.	2,090	31	Cheyenne, Wyo.	40.0	sw.	5,000	29	Elko, Nev.	59.9	sw.	13,290	4	Redding, Calif.
Southwest ⁹	24.8	sw.	2,180	2	Sandberg, Calif.	21.6	sw.	3,720	24	Las Vegas, Nev.	45.3	sw.	11,710	24	Las Vegas, Nev.

¹ Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.

² Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.

³ South Carolina, Georgia, Florida, and Alabama.

⁴ Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.

⁵ Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.

⁶ Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and western Tennessee.

⁷ Montana, Idaho, Washington, and Oregon.

⁸ Wyoming, Colorado, Utah, northern Nevada, and northern California.

⁹ Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

RIVER STAGES AND FLOODS

By BENNETT SWENSON

Severe drought conditions continued during August in south-central portions of the country while a few localized floods occurred in northern sections. A disastrous flash flood in West Virginia on August 4-5 resulted in the loss of 23 lives and property losses of over a million dollars. Other floods were confined principally to eastern Iowa and neighboring areas, and Utah.

Precipitation during August followed very closely the pattern which has prevailed during the summer months, June to August. August precipitation was 25 percent of normal, or less, in sections extending from the lower Ohio River basin southwestward to Texas, in eastern Maryland, eastern Virginia, and most of California and Nevada. For the summer months the precipitation in the same areas was generally 50 percent or less of normal. On the other hand, the extreme Northeast, the upper Mississippi and Missouri Valleys, the far Northwest, and portions of Arizona, Utah, and New Mexico, had above-normal precipitation.

Atlantic Slope drainage.—River stages in most of New England were well above normal. Elsewhere in the Atlantic Slope drainage, the rivers continued generally below normal during the month.

Light flooding occurred in the Waccamaw River on August 22-27 and again on August 30-31. On August 18-19, Conway, S. C., reported 4.38 inches of rain in 48 hours. The river rose to a stage of 7.3 feet on August 24-25. On August 29-30 heavy rain again occurred amounting to 5.45 inches at Conway. This rain was evidently local as the river rose only 0.5 foot, cresting at 7.3 feet at Conway on August 30. Flood stage at Conway is 7 feet.

East Gulf of Mexico drainage.—Unusually low stages prevailed; at Columbus, Miss., on the Tombigbee River, the river was within 0.1 foot of the lowest stage of record, 0.0 foot.

Upper Mississippi Basin.—Moderately high stages prevailed throughout the basin. Flooding was confined to streams in eastern Iowa and adjacent areas, with severe floods in the Skunk River.

Excessive rainfall during the night of August 2-3, averaging about 7 inches in portions of Washington and

Jefferson Counties, Iowa, and over 2 inches in adjacent counties, caused the Skunk River to rise rapidly from Coppock, Iowa, to the mouth. Before the heavy rains set in, the river was moderately high and rising slowly. From the 2d to the 3d the stage at Coppock rose sharply from a stage of 9.7 feet to 17.4 feet, and crested at 21.6 feet on the morning of the 4th. The record stage at Coppock is 22.1 feet, which occurred on June 15, 1930. At Augusta, Iowa, the river crested at 20.3 feet on the 6th, compared with a stage of 22.55 feet on June 17, 1930.

During the middle of the month the Raccoon River was at medium flood stage.

Heavy rainfall, averaging about 5 inches in the Canton, Mo.-Quincy, Ill., area on August 8, caused sharp rises in the Mississippi River below Quincy. The river exceeded flood stage slightly at Hannibal and Louisiana, Mo., on August 8 and 9.

The following report is submitted by the official in charge, Weather Bureau Office, Dubuque, Iowa, relative to a series of heavy showers and flooding in streams in northeastern Iowa, southwestern Wisconsin and northwestern Illinois on August 13:

A series of heavy showers on August 13, attended by moderate to severe electrical activity struck much of the region near the Mississippi River, from the Iowa-Minnesota border to (or beyond) Bellevue, Iowa. This occurred mostly between midnight and 6 a. m.

Rainfall along the Mississippi was reported in amounts which ranged from 1.90 to 4.00 and 4.50 inches, the latter figures being recorded, respectively, at Prairie du Chien, Wis., and McGregor, Iowa. Similar conditions prevailed over the Turkey River Valley and many of the small tributaries in Iowa, Wisconsin, and extreme northwestern Illinois.

Many tributaries overflowed, and flooded bottomland fields, which, if in crops, were mostly in corn. In most sections the water receded from fields rapidly enough so that little or no damage resulted.

In several urban communities the storm sewers were overtaxed, with considerable property damage resulting, particularly in McGregor, Iowa, where the damage was estimated at about \$25,000. Railroads suffered considerable loss because of track washouts near McGregor and Monona, Iowa, and Prairie du Chien, Glenhaven, and Wauzeka, Wis. Monetary losses were reported at about \$3,000.

In Galena, Ill., a rapid rise of the Galena River threatened a severe flood, but the rise was very flashy and a serious overflow did not materialize. The stream started to recede before any severe damage was done. A similar flashy behavior was reported in practically all streams, including the Mississippi where most of the rise occurred below Prairie du Chien, and particularly in the im-

mediate vicinity of Dubuque. A rise of more than 4 feet occurred at Dubuque, in approximately 28 hours, after which the river started to recede fairly rapidly. Damage near Dubuque, and elsewhere along the Mississippi, was slight, except for losses suffered by the railroads.

Ohio River basin.—The following report is submitted by the official in charge, Weather Bureau Office, Parkersburg, W. Va., relative to the disastrous flash flood in the upper Little Kanawha River basin:

The most disastrous flash flood in the history of central West Virginia occurred during the night of August 4-5, 1943, causing the deaths of 23 persons and property damage estimated at near \$1,300,000. The damage was confined to an area approximately 48 miles long, extending from just west of Big Island Run to the upper reaches of Salt Lick Creek, with the maximum width about 12 miles.

Thundershowers, mostly of short duration, occurred about dusk on August 4, throughout the Little Kanawha River Basin. However, these showers were locally heavy in the Burnsville-Copen area. They were followed about 3 hours later by record-breaking rains accompanied by one of the worst, if not the worst, electrical storms of record. The excessive rains began to fall in the McFarlan-Girta area about 11 p. m., August 4, and progressed southeastward into the Salt Lick Creek Basin where the excessive rains began about 1 a. m., August 5. These rains continued in most places for from 1 to 2 hours and were generally continuous, although quite a number of persons reported brief slackenings of the hard rains. There were two main peaks of excessive rainfall, one over the Burnsville-Copen-Cedarville area and the other over the Nobe-Brohard area.

A crest stage of 30.7 feet was reached at Glenville at 6:30 p. m., of the 5th, while the crest stage at Creston was 19.7 feet at 9 a. m., of the 6th. The Creston crest was 0.3 foot below flood stage. The anomalous situation of a crest 2.3 feet below the record at Glenville, while Burnsville, 18 miles upstream had a crest 10 inches higher than the previous record, was due to the fact that approximately two-thirds of the Glenville drainage area comprises sections where the intensity of the rainfall sloughed off sharply. Except for the high-water mark at Burnsville, gage heights on the main stream do not tell the story of this flood; neither do the amounts of rainfall recorded at the river and the cooperative stations maintained in the basin, except that the record at McFarlan, just north of the downstream peak of maximum rainfall indicated a fall of 3.70 inches in 1 hour. The findings of a survey of the rainfall catch in regions where there are no official gages will be reported in a later issue of the REVIEW.

Generally speaking, the southern tributaries of the Little Kanawha River starting with Long Run and ending with the left Fork of Steer Creek were the highest of record, while from Third Run to and including Yellow Creek, the northern tributaries crested higher than ever before. On the South Fork of the Hughes River, the tributaries from Spruce Creek to Big Island Run were also as high or higher than the previous records.

The damage to the land was tremendous. Practically every hill in the flood area was scarred by one or more blow-outs or slides. Every cove showed excessive washes. The scour and fill in the valleys was great for, in addition to the usual gravel fill, sizeable rocks and some boulders were washed from the hill tops down into the valleys. Instead of the usual gulley drainage, observers reported that the run-off was in sheet-form with waves forming in some instances. The run-off was rapid in the creeks, as all of them crested at or shortly after the cessation of the excessive rainfall.

The South Fork of the Hughes River ran out rapidly. The body of one of the victims of Big Island Run floated downstream into the South Fork, then into the Little Kanawha River and then into the Ohio River and was recovered near Harris Ferry, W. Va., at 6 p. m., August 5, shortly before the main stream crested at Glenville. The body floated 49 miles in 16 hours. The run-out of the Little Kanawha River at Parkersburg was very swift for the 2 days (5th and 6th), as the Ohio River was in pool above Parkersburg and the navigation dams below Parkersburg had been lowered in anticipation of this run-off.

Twenty-three persons were drowned: 8 in the vicinity of Heaters on O'Brien Fork of Salt Lick Creek, 8 in the vicinity of Copen on Copen Creek, 5 at Girta on Big Island Run, and 2 above Tanner on Tanner Creek.

Property damage has been estimated at near \$1,300,000, about half of which was to crops and farms. On the 10 miles of track of the Baltimore & Ohio Railroad between Heaters and Burnsville several bridges washed out, much of the track was washed out or moved considerable distances and the roadbed damaged generally. Highways were damaged by slides, fills, and wash-outs and many

bridges were destroyed. In many instances streams moved over into the highways and will have to be rechanneled. All bottom land crops were destroyed and damage to home gardens was considerable. Much tillable land is now covered with rubble. Many houses, stores, schools, and churches were washed away; while others were moved some distance from their foundations. Considerable livestock and poultry were drowned. Extensive damage was done to fences and farm implements. Well-water supply was contaminated by overflow of streams or surface drainage. The small community of White Pine was practically wiped out. Burnsville was the only sizeable community to be damaged by the flood. Glenville's damage was much less, with the monetary loss due principally to loss of business and to expense of cleaning up.

Light to moderate overflows occurred in portions of the Scioto and Wabash Rivers between August 4 and 7 following rains ranging from 2 to 4 inches over portions of the basins on August 3-4.

Colorado River and Great Basin drainage.—The following report of flash floods in Utah is submitted by the official in charge, Weather Bureau Office, Salt Lake City, Utah:

One of the most devastating floods in the history of that area struck near the town of Helper, Utah, on August 5, causing \$20,000 damage to homes and other property, and an estimated \$50,000 damage to mine property, highways, railroads, and equipment in Spring Canyon north of the town, the most important coal mining district in the State.

Caused by an afternoon cloudburst which poured water into Spring Canyon for 35 minutes, the flood swept down the Price River, carrying haystacks, furniture, portions of houses, mine cars, and automobiles. Coal mining operations in some of the mines were suspended as long as 4 days. At least 20 homes were hit by the flood, and more than a dozen automobiles were carried into the river and badly damaged as flood waters poured through garages in which miners had parked their cars.

Another cloudburst on the same day caused damage estimated at \$120,000 to the town of Monroe, Utah. The municipal power plant was badly damaged by flood waters from Monroe Canyon, leaving the city without power and light for several days. The water system was disrupted, many homes were damaged by mud-flows and water, and there was great damage to crops, particularly potatoes and beets. Some farm land is completely lost, according to reports.

FLOOD-STAGE REPORT FOR AUGUST 1943

[All dates in August unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
HUDSON BAY DRAINAGE					
Lake Erie	Feet			Feet	
St. Marys: Decatur, Ind.-----	13	5	5	13.0	5
ATLANTIC SLOPE DRAINAGE					
Waccamaw: Conway, S. C.-----	7	{ 22 30	27 (1)	7.3 7.3	24-25 30
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Skunk:					
Coppock, Iowa.-----	12	3	13	21.6	4
Augusta, Iowa.-----	15	4	8	20.3	6
Raccoon: Van Meter, Iowa.-----	13	15	17	14.7	16
Mississippi:					
Hannibal, Mo.-----	13	8	8	13.1	8
Louisiana, Mo.-----	12	{ 9 17	9 18	12.2 12.2	9 17-18
Missouri Basin					
Grand: Chillicothe, Mo.-----	18	5	5	18.0	5
Ohio Basin					
Little Kanawha: Glenville, W. Va.	23	5	6	30.7	5
Scioto: Circleville, Ohio.-----	14	6	7	15.0	6
West Fork of White: Anderson, Ind.	10	4	6	12.5	5
Wabash:					
Wabash, Ind.-----	12	4	6	17.8	4
Lafayette, Ind.-----	11	5	7	13.5	6

¹ Continued into September.

² Due to manipulation of dam 24.

CLIMATOLOGICAL DATA

CONDENSED CLIMATOLOGICAL SUMMARY OF TEMPERATURE AND PRECIPITATION BY SECTIONS

(For description of tables and charts, see REVIEW January 1942, p. 15)

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Section	Temperature						Precipitation					
	Section average	Departure from the normal	Monthly extremes				Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date	Station	Amount	Station	Amount
Alabama.....	82.2	+2.4	Centerville.....	109	26	Huntsville.....	54	18	Pine Level.....	11.98	Cuba.....	0.25
Arizona.....	77.9	-0.6	Ehrenberg.....	113	26	Bright Angel.....	35	31	Helvetia.....	7.46	Yuma Valley.....	.00
Arkansas.....	84.6	+4.5	2 stations.....	113	15	Lend Hill.....	48	18	Portland.....	4.67	6 stations.....	.00
California.....	70.6	-1.7	Cow Creek.....	122	1	Portola.....	19	19	Crescent City (near).....	2.13	256 stations.....	.00
Colorado.....	68.0	+2.3	Las Animas.....	106	1	Dillon.....	26	31	Trout Lake.....	8.06	Windsor.....	.12
Florida.....	82.0	+0.6	De Funiak Springs.....	102	17	Hilliard.....	59	25	Miami Airport.....	16.88	Crestview.....	1.56
Georgia.....	81.0	+1.5	3 stations.....	105	15	Blairsville.....	50	20	Camp Stewart.....	14.35	Fort Valley.....	.67
Idaho.....	65.3	-1.0	Grand View.....	108	13	Landmark.....	19	23	Montpelier.....	2.30	9 stations.....	.00
Illinois.....	77.0	+2.4	Olney.....	109	26	Danville.....	44	20	Gridley.....	10.52	Casey.....	T
Indiana.....	75.4	+1.8	New Harmony.....	107	24	Marengo.....	40	19	La Porte.....	8.22	2 stations.....	T
Iowa.....	74.0	+1.8	Shenandoah.....	101	25	Decorah.....	40	18	Washington.....	10.40	Le Mars.....	.74
Kansas.....	82.8	+4.9	Ashland.....	113	2	2 stations.....	44	18	Tonganoxie (near).....	7.85	Cottonwood Falls.....	.14
Kentucky.....	78.1	+2.2	Earlington.....	106	25	St. John.....	42	20	Berea.....	4.73	2 stations.....	T
Louisiana.....	83.9	+2.6	Urania.....	109	28	Ruston.....	53	21	Morgan City.....	9.99	Tallulah.....	.03
Maryland-Delaware.....	75.6	+2.1	Keedysville, Md.....	102	14	Sines, Md.....	38	19	Oakland, Md.....	7.45	Easton, Md.....	.07
Michigan.....	68.0	+1.0	6 stations.....	94	1	Kenton.....	29	18	Sandusky.....	6.41	Jackson.....	.78
Minnesota.....	68.5	+0.9	2 stations.....	100	1	Meadowlands.....	35	18	Fairmont.....	7.85	Hallock.....	1.19
Mississippi.....	84.0	+3.2	do.....	109	27	2 stations.....	54	19	Fruitland Park.....	7.15	3 stations.....	.00
Missouri.....	79.8	+3.2	Wasola.....	110	26	do.....	44	18	Canton, Lock No. 30.....	6.94	Koshkonong.....	.11
Montana.....	65.4	+0.3	McRae.....	104	16	West Yellowstone.....	24	26	Wibaux.....	4.44	Bear Dance.....	.08
Nebraska.....	77.5	+4.1	Alma.....	113	24	Ewing.....	33	17	Ewing.....	4.61	Lake Minatare.....	.05
Nevada.....	70.0	-0.7	Overton.....	115	13	2 stations.....	21	31	Pioche.....	1.62	31 stations.....	.00
New England.....	66.6	-0.4	2 stations.....	96	2	Lake Frontiers, Maine.....	33	18	Cadillac Mountain, Maine.....	10.00	2 stations.....	.71
New Jersey.....	73.2	+1.2	do.....	99	12	Sussex.....	39	7	Morris Plains.....	4.61	Barnegat City.....	.22
New Mexico.....	73.5	+2.8	do.....	108	20	2 stations.....	34	27	Des Moines.....	7.90	5 stations.....	.00
New York.....	68.1	+0.5	Bedford Hills.....	98	2	Lake Placid Club.....	36	27	Hamilton.....	7.67	Ogdensburg.....	.78
North Carolina.....	77.4	+1.4	3 stations.....	105	14	Banners Elk.....	39	20	New Holland.....	11.07	Marion.....	.20
North Dakota.....	67.7	+1.2	Mott.....	104	1	Parshall.....	31	17	Fargo.....	6.81	Devils Lake.....	.49
Ohio.....	72.4	+0.7	Ironton.....	101	14	Millport.....	40	19	Canton.....	7.23	Chilo.....	.15
Oklahoma.....	87.1	+5.5	Altus.....	118	3	Reydon (near).....	46	18	Regnier (near).....	4.22	12 stations.....	.00
Oregon.....	62.8	-2.5	Huntington.....	107	1	Round Grove.....	22	30	Silver Creek.....	3.78	3 stations.....	.00
Pennsylvania.....	70.8	+0.5	Phoenixville.....	101	24	2 stations.....	33	20	Greensburg.....	6.53	West Grove.....	.43
South Carolina.....	80.2	+1.3	Calhoun Falls.....	105	25	6 stations.....	54	20	Charleston Airport.....	14.53	Darlington.....	.94
South Dakota.....	73.7	+2.7	Pierre.....	109	1	2 stations.....	33	17	Clark.....	6.19	Rapid City.....	.10
Tennessee.....	79.9	+3.1	3 stations.....	106	10	Rugby.....	43	20	Columbia.....	6.08	Kingston.....	.38
Texas.....	85.8	+3.0	Vernon.....	119	3	Miami.....	50	18	Dalhart.....	3.80	60 stations.....	.00
Utah.....	70.8	+1.0	St. George.....	107	13	Mountain Dell Dam.....	19	31	Beaver Canyon.....	5.21	Callao.....	.01
Virginia.....	75.8	+1.7	Clarksville.....	104	14	Burkes Garden.....	35	20	Rose Hill.....	6.11	Wallaceton.....	.40
Washington.....	64.1	-1.6	Wahluke (near).....	102	13	Stockdill Ranch.....	31	23	Higley Peak.....	6.29	Cle Elum.....	T
West Virginia.....	72.3	+0.5	Martinsburg.....	105	10	2 stations.....	38	19	Pickens No. 2.....	7.95	Kearneysville.....	.98
Wisconsin.....	69.5	+1.8	Wisconsin Rapids.....	97	1	Coddington.....	31	18	Prairie du Chien.....	10.00	Grantsburg.....	1.73
Wyoming.....	67.2	+3.1	3 stations.....	104	1	Lamar Ranger Station.....	25	26	Crandall Creek.....	2.55	Hawk Springs.....	T
Alaska (July).....	53.8	-1.7	University.....	86	6	Wainwright.....	28	1	Kimsham Cove.....	16.11	Wainwright.....	.34
Hawaii.....	75.6	+0.7	Waianae.....	96	21	Volcano Observatory.....	52	14	Kukul.....	48.00	Mikilua.....	.00
Puerto Rico.....	78.8	0	Guayama.....	97	25	Guineo Reservoir.....	58	8	Rio Blanco (1800).....	19.61	Potale.....	1.00

¹ Other dates also.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS

District and station	Elevation of instruments			Pressure			Temperature of the air										Precipitation	Wind					Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms										
	Barometer above sea level	Thermometer above ground	Anemometer above ground	Station	Sea level	Departure from normal	Mean max. min. +2	Departure from normal	Maximum	Date	Mean maximum	Minimum	Date	Mean minimum	Greatest daily range	Mean temperature of dew-point		Mean relative humidity	Total	Departure from normal	Days with 0.01 inch or more	Average hourly velocity					Prevailing direction	Maximum velocity		Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
																												Miles per hour	Direction								Date
New England	ft.	ft.	ft.	in.	in.	in.	°F. 67.0	°F. +0.4	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	% 81	In. 3.00	-0.5	Miles																
Eastport	75	67	85	29.80	29.89	-0.07	60.0	-0.7	78	5	68	50	8	52	25	54	86	6.61	+3.6	15	7.3	s.	29	s.	14	10	13	8	5.4	.0	.0	3				
Greenville, Maine	1,070	6	41	28.74	29.90	-.08	61.4	-.8	85	2	73	37	8	50	37	56	18	2.94	-.4	18	nw.	20	s.	1	18	12	10	9	5.3	.0	.0	2				
Portland, Maine	103	5	43	29.77	29.90	-.08	65.4	-.1	91	2	75	48	7	56	32	59	83	3.27	+1.1	11	6.2	s.	20	s.	16	12	10	9	5.3	.0	.0	5				
Concord	289	4	45	29.59	29.91	-.07	65.5	-1.3	93	2	77	41	27	54	35	59	83	3.19	-.4	12	4.6	se.	22	nw.	26	10	10	11	5.9	.0	.0	5				
Burlington	403	11	48	29.81	29.91	-.07	67.5	-.4	89	2	77	47	27	58	31	59	82	4.84	+1.5	17	7.7	s.	25	s.	13	4	16	14	5.0	.0	.0	6				
Northfield	876	12	60	28.97	29.91	-.07	63.6	+2.2	86	2	74	40	27	54	31	59	82	4.22	-.7	20	6.6	sw.	30	sw.	14	4	13	14	7.0	.0	.0	6				
Boston	124	33	62	29.77	29.91	-.08	71.0	-.0	94	2	79	56	27	63	27	59	71	1.28	-2.3	9	9.8	sw.	28	sw.	13	10	9	12	5.0	.0	.0	2				
Nantucket	12	11	59	29.90	29.92	-.07	68.8	+1.0	82	2	75	55	29	62	18	63	88	4.03	-.6	8	9.5	sw.	30	s.	14	11	12	8	4.7	.0	.0	5				
Block Island	26	11	46	29.89	29.92	-.07	69.3	-.8	82	2	75	58	29	63	17	63	85	2.42	-1.2	6	12.1	sw.	31	w.	14	19	9	3	2.9	.0	.0	4				
Providence	159	46	60	29.75	29.93	-.06	72.2	+1.2	96	2	82	54	27	63	27	61	78	.82	-2.7	4	7.3	sw.	30	sw.	3	11	11	9	5.0	.0	.0	4				
Hartford	159	5	44	29.71	29.89	-.10	70.6	+1.7	93	2	82	50	20	60	32	61	78	1.18	-3.1	9	7.3	s.	25	sw.	13	8	12	11	5.8	.0	.0	4				
New Haven	107	5	39	29.80	29.93	-.06	70.9	+2.3	93	2	81	52	20	61	32	62	76	1.22	-2.7	7	6.6	sw.	21	se.	29	13	10	8	4.8	.0	.0	4				
Middle Atlantic States							75.3	+1.8									74	1.90	-2.3																	
Albany	97	26	40	29.78	29.89	-.09	69.1	+1.1	95	2	80	47	27	58	32	60	79	4.50	+1.4	14	6.5	s.	25	w.	16	8	12	11	6.0	.0	.0	7				
Binghamton	871	57	79	29.00	29.93	-.06	69.6	+1.6	92	2	81	45	20	58	35	60	83	4.11	+1.5	9	5.2	w.	20	w.	13	6	17	8	5.8	.0	.0	2				
New York	314	415	454	29.58	29.92	-.08	74.5	+1.4	91	2	82	58	28	67	20	61	70	2.95	-1.4	7	11.9	s.	32	s.	13	11	7	7	4.7	.0	.0	8				
Harrisburg	374	30	49	29.53	29.93	-.08	75.2	+2.6	97	12	86	54	20	64	33	62	70	1.68	-2.4	8	6.5	w.	29	sw.	4	11	11	9	5.1	.0	.0	5				
Philadelphia	114	6	56	29.79	29.92	-.08	76.4	+1.6	95	12	87	57	20	66	29	63	68	1.65	-4.0	7	7.2	sw.	22	n.	10	9	14	8	5.4	.0	.0	4				
Reading	323	47	306	29.57	29.92	-.07	76.0	+3.1	95	12	87	55	20	65	33	63	68	1.67	-2.5	7	8.7	nw.	30	sw.	13	13	10	8	5.0	.0	.0	4				
Scranton	805	72	104	29.08	29.94	-.06	71.2	+1.4	92	12	82	47	20	60	30	65	82	2.83	-.9	8	5.7	n.	30	nw.	18	9	18	4	5.1	.0	.0	2				
Atlantic City	52	37	172	29.87	29.93	-.07	72.2	-.3	88	15	78	59	19	66	20	65	82	4.4	-4.0	6	13.6	s.	33	sw.	10	16	7	8	4.1	.0	.0	2				
Trenton	100	89	107	29.72	29.93	-.08	74.8	+1.8	93	2	85	56	19	64	31	63	70	2.81	-1.9	8	7.7	s.	21	s.	3	11	13	7	5.1	.0	.0	6				
Baltimore	123	100	215	29.80	29.93	-.08	79.1	+3.6	99	14	88	60	30	70	24	63	67	.86	-3.5	7	8.5	s.	25	se.	12	12	7	4.5	.0	.0	4					
Washington	112	56	100	29.81	29.93	-.08	79.0	+4.0	100	14	90	59	20	68	26	64	67	.74	-3.3	6	8.6	s.	18	n.	10	14	12	5	4.3	.0	.0	2				
Cape Henry	18	8	54	29.91	29.94	-.08	77.0	-.1	95	14	85	63	24	69	23	69	80	1.12	-3.7	3	9.3	sw.	40	n.	5	17	10	4	3.8	.0	.0	2				
Lynchburg	686	144	184	29.23	29.94	-.08	78.2	+2.6	100	25	90	54	20	66	33	64	70	2.27	-1.5	7	8.3	w.	24	ne.	10	18	8	5	3.5	.0	.0	6				
Norfolk	91	80	125	29.85	29.96	-.04	78.6	+1.2	95	14	87	66	30	70	23	69	81	1.00	-4.2	4	8.3	sw.	21	ne.	11	12	7	4.5	.0	.0	4					
Richmond	144	11	52	29.78	29.92	-.09	78.8	+2.3	99	14	90	55	20	67	32	65	71	.80	-3.6	6	6.8	sw.	21	nw.	16	17	9	5	3.7	.0	.0	6				
South Atlantic States							80.3	+2.2									79	3.91	-1.8																	
Asheville	2,253	77	92	27.70	29.97	-.05	75.2	+4.7	94	16	86	53	19	64	33	64	78	2.17	-2.0	8	5.1	nw.	23	se.	11	9	11	11	5.7	.0	.0	8				
Charlotte	779	63	86	29.14	29.95	-.07	80.6	+3.5	100	27	91	59	20	70	28	68	74	1.72	-3.4	7	5.3	s.	17	n.	28	10	11	10	5.2	.0	.0	6				
Greensboro	886	6	56	29.04	29.97	-.06	77.6	-.6	97	25	90	52	20	65	35	65	74	1.52	-.2	6	6.3	sw.	23	s.	27	11	13	7	4.6	.0	.0	8				
Hatteras	11	5	50	29.93	29.94	-.06	78.4	-.4	88	11	84	68	1	73	18	72	83	5.56	-.2	10	10.9	ne.	29	nw.	17	12	13	6	4.5	.0	.0	8				
Raleigh	376	27	69	29.56	29.95	-.06	79.1	+2.2	101	26	90	57	20	68	32	68	77	3.17	-2.2	5	6.7	sw.	33	w.	26	12	7	12	5.2	.0	.0	6				
Wilmington	72	73	107	29.87	29.95	-.05	79.6	+2.0	93	15	85	62	20	71	23	72	84	5.87	-.5	10	7.7	sw.	32	sw.	25	14	13	4	4.4	.0	.0	8				
Charleston	48	11	92	29.88	29.94	-.07	81.8	-.8	97	28	89	66	20	75	21	73	88	1.35	-5.2	8	9.1	s.	26	ne.	19	18	7	6	4.0	.0	.0	7				
Columbia, S. C.	347	70	91	29.58	29.94	-.07	81.6	+2.0	100	26	92	62	21	71	28	71	79	3.84	-1.6	9	6.6	s.	27	sw.	5	9	12	10	5.2	.0	.0	8				
Greenville, S. C.	1,040	18	36	28.87	29.95	-.07	79.6	+3.8	100	26	90	62	21	70	29	67	74	3.77	-1.7	7	6.3	ne.	23	e.	28	9	12	10	5.3	.0	.0	9				
Augusta	182	62	77	29.74	29.94	-.07	82.2	+1.8	100	14	93	62	22	72	30	68	71	2.11	-2.9	9	4.9	s.	25	n.	20	11	13	7	4.6	.0	.0	13				
Savannah	65	73	132	29.87	29.94	-.07	83.2	+2.5	99	15	93	67	20	74	28	73	83	5.66	-1.6	9	8.0	sw.	32	ne.	15	12	15	4	4.6	.0	.0	8				
Jacksonville	43	86	110	29.91	29.96	-.05	82.2	-.5	98	28	90	65	25	74	28	73	83	7.79	+2.0	14	6.6	sw.	28	sw.	13	7	17	7	5.4	.0	.0	13				
Florida Peninsula							82.9	+0.5									80	4.74	-1.6																	
Key West	21	10	64	29.93	29.96	-.02	84.8	+1.3	92	19	90	75	22	79	14	75	75	2.56	-2.0	14	7.0	se.	27	w.	16	5	20	6	5.4	.0	.0	14				
Miami	25	242	249	29.94	29.97	-.05	81.2	-.2	90	17	86	70	23	76	17	74	83	5.31	-.9	19	8.1	se.	35	s.	29	5	16	10	6.0	.0	.0	19				
Tampa	35	6	43	29.92	29.96	-.04	82.8	+1.3	95	11	90	70	29	76	22	74	82	6.35	-1.8	11	7.9	s.	31	e.	29	3	19	9	6.3	.0	.0	16				
East Gulf States							82.5	+2.5									76	2.86	-2.6																	

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS—Continued

District and station	Elevation of instruments			Pressure		Temperature of the air									the of dew-point	Precipitation			Wind																				
	Barometer above sea level	Thermometer above ground	Anemometer above ground	Station	Sea level	Departure from normal	Mean max. + mean min. + 2			Departure from normal			Greatest daily range	Mean temperature		Mean relative humidity	Total	Days with .01 inch or more	Average hourly velocity	Prevailing direction	Maximum velocity			Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms									
							°F.	°F.	°F.	°F.	°F.	°F.									°F.	In.	In.								Miles	Direction	Date	Direction	Date	Direction	Date	Direction	Date
Ohio Valley and Tennessee		Ft.	Ft.	In.	In.	In.	°F.	°F.	°F.	°F.	°F.	°F.	% 74	In. 1-75	In. 1-8	Miles																							
Chattanooga ¹	762	6	66	29.14	29.93	-0.07	80.0	+4.3	101	27	92	57	20	68	33	70	80	2.64	-1.4	6	4.3	ne.	39	n.	14	10	16	5	4.8	.0	.0	7							
Knoxville ¹	995	27	53	28.92	29.95	-0.06	79.0	+2.8	101	27	91	56	20	67	34	68	78	1.48	-2.4	9	5.7	ne.	35	nw.	8	18	10	5	3.4	.0	.0	8							
Memphis ¹	599	6	82	29.50	29.91	-0.07	82.0	+4.4	104	27	94	57	19	70	34	66	67	1.60	-2.8	3	7.2	sw.	21	w.	16	17	12	14	4.1	.0	.0	4							
Nashville ¹	546	6	82	29.36	29.93	-0.07	82.0	+4.4	104	27	94	57	19	70	34	66	67	1.55	-2.2	5	6.7	s.	26	w.	14	14	14	14	4.1	.0	.0	6							
Lexington	989	6	82	28.92		-0.06	79.0	+2.0	97	25	88	55	18	70	26	64	69	1.06	-2.4	5	6.7	s.	26	w.	14	14	14	14	4.1	.0	.0	6							
Louisville ¹	525	106	120	29.38	29.94	-0.06	79.0	+2.0	97	25	88	55	18	70	26	64	69	1.06	-2.4	5	6.7	s.	26	w.	14	14	14	14	4.1	.0	.0	6							
Evansville ¹	431	12	40	29.46	29.91	-0.06	79.0	+2.0	102	26	92	50	19	67	36	65	69	1.13	-3.2	2	6.2	sw.	39	sw.	4	9	18	4	4.9	.0	.0	3							
Indianapolis ¹	823	5	54	29.07	29.93	-0.06	74.5	+2.1	97	24	86	50	18	63	34	66	77	1.55	-1.7	8	7.5	sw.	33	nw.	12	7	13	17	5.6	.0	.0	2							
Terre Haute ¹	675	68	149	29.33	29.93	-0.06	78.4	+2.3	102	24	89	53	19	68	30	65	71	1.55	-1.7	8	7.5	sw.	23	d.	3	11	13	17	5.0	.0	.0	4							
Cincinnati ¹	627	11	51	29.28	29.95	-0.06	74.5	+2.6	98	24	87	51	19	65	31	66	77	1.65	-1.8	5	6.3	sw.	18	sw.	3	14	12	6	4.3	.0	.0	4							
Columbus ¹	822	90	110	29.09	29.95	-0.06	76.6	+1.6	93	31	84	53	19	65	29	63	76	1.78	-1.5	5	7.1	s.	23	sw.	4	12	8	11	5.0	.0	.0	5							
Dayton ¹	1,003	6	55	28.90	29.95	-0.06	74.2	+1.8	93	31	84	52	19	64	29	63	72	2.30	-1.0	4	7.8	s.	26	nw.	16	12	12	7	4.8	.0	.0	8							
Elkins ¹	1,947	61	78	27.98	30.00	-0.02	69.1	+0.9	89	12	81	46	20	58	36	62	90	4.39	+5.0	11	4.2	w.	18	sw.	4	15	2	14	5.0	.0	.0	5							
Parkersburg	637	77																																					

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS—Continued

[illegible]

LATE REPORTS FOR JULY 1943

[illegible]

¹ Data are airport records.
² Barometric data (adjusted to old city elevation) and hygrometric data from airport; otherwise city office records.
³ Observations taken bihourly.
⁴ Pressure (adjusted to old city elevation), temperature and hygrometric data from airport; otherwise city office records.
⁵ Temperature and precipitation from city office records; other data from airport.
NOTE.—Except as indicated by notes 1, 2, 4, 5, and 6 data in table are city office records.

SEVERE LOCAL STORMS, AUGUST 1943

(Compiled by Mary O. Souder)

[The table herewith contains such data as has been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the United States Meteorological Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Dickinson, Emmet, Palo Alto Counties, Iowa.	1	2:30-3 a. m.	17		\$300,000	Hail, wind, and rain.	Heavy hail damaged corn, shocked grain and flax, injured some cattle, killed poultry, broke windows, and damaged roofs. The most severe loss occurred in an area 10 miles long and 5 miles wide between the towns of Raleigh, Superior, and Turrell. Near Raleigh some cornfields were a total loss. Wind accounted for \$25,000 of the entire loss. Heavy downpours of rain were estimated at 6 to 6 inches near the center of the storm. Water stood in fields and hailstones were 6 inches deep in ditches 12 hours after the storm had ended.
Poynette, Wis., vicinity of.	2	4 p. m.	1 1/4		1,200	Wind.	Outbuildings damaged and moved; windows broken; corn lodged; property damaged; 3 persons injured; path 4 miles long.
Sweet Grass and Stillwater Counties, Mont.	2	4:30-5:30 p. m.	880		15,000	Hail.	Principal loss in oats, wheat, barley, and alfalfa. Some poultry killed; path 25 miles long.
Gallatin County, Mont.	2	P. m.	1 2/4		8,000-10,000	do.	Loss mostly to peas; path 2 1/4 miles long.
Stillwater and Yellowstone Counties, Mont.	2	do.	11		200,000	Heavy hail.	Loss in beets, truck, and grains; path 11 miles long.
Henry County, Iowa.	2-3	Dusk of 2d-7:30 a. m. of 3d.			25,000	Electrical, rain, and flood.	7 inches of rain reported to have fallen; railroads, strawstack damaged; chickens and pigs drowned; soil eroded, cellars flooded, and pastures muddy.
Montgomery County, Iowa.	2-3	9 p. m.-4 a. m.			500	Heavy rain electrical	Worst electric storm in years. Livestock valued at \$500 killed by lightning. Rain amounting to 3.50 inches fell in 7 hours.
Louisa County, Iowa.	2-3	11 p. m.-4 a. m.			6,000	Rain and flood.	Loss in crops.
Keokuk County, Iowa.	2-3	11:45 p. m.-7:30 a. m.		1	1,540,000	Rain, flood, hail, and wind.	Rainfall of 4.25 inches reported; man killed.
Washington County, Iowa.	2-3	P. m.			217,000		7.35 inches of rain in 14 1/4 hours ending 9:30 a. m., of the 3d, recorded.
Louisa County, Iowa.	2-3				102,312	Rain, flood, and hail.	Much loss in crops, property damaged, hogs and sheep drowned. Several thousand acres of crops severely damaged by water 4 feet deep. Chief loss in crops to soybeans; many young hogs lost; livestock moved from muddy pastures.
Iowa County, Iowa.	3	A. m.			40,000	Rain, flood, and wind.	Floods swept small fields of grain away and covered many with mud. Property damaged; loss in livestock and crops.
Ablene, Tex.	3	4:25 p. m.		0	350	Tornado.	Utility poles blown down.
Big Horn County, Mont.	3		13		10,000	Heavy hail.	Loss in wheat, beans, sugar beets, and alfalfa.
Daniels County, Mont.	4	7:30 p. m.	14		500,000	do.	Loss in wheat, barley, oats, and flax; path 30 miles long.
Carlisle, Pa., and vicinity.	4	8-9 p. m.				Electrical and heavy rain.	Utilities damaged; 3 houses struck by lightning; barn burned.
Chouteau County, Mont.	7	3:30-4:30 p. m.	400-800		30,000	Hail.	Principal loss in wheat, some to barley and oats; path 30 miles long.
Leoti, Kans., vicinity of.	8	6:30 p. m.	12		1,000	Heavy hail.	Loss in crops; path 10 miles long.
Duluth, Minn.	8	11:45 p. m., central war time.			3,000	High wind.	The roof of the Coolerater Plant No. 2 was partly torn off with estimated damage of \$3,000. Number of trees uprooted and several garages demolished. In 1 instance a garage was lifted off the car, leaving the car intact and undamaged, except for a scratched fender. Boards from the garage were scattered over half a block and the frame work was piled against the owner's back porch. A tree falling across a power line disrupted electric and telephone service at the Western Paint & Varnish Co. plant.
Lycoming County, Pa.	8	P. m.				Wind, hail, electrical	Several barns uprooted, 1 blown over; trees uprooted; orchards and gardens damaged; utilities interrupted.
Luzerne County, Pa.	8					Electrical.	Electric service disrupted; 2 houses damaged.
Fort Belvoir, Va.	10	P. m.		8		do.	Soldiers in training at Fort Belvoir killed when a tree under which they sought shelter from a brief shower was struck.
O'Brien and Cherokee Counties, Iowa.	11	7 p. m.		0	200,000	Tornado and hail.	Hail fell along a line extending diagonally from northwest to southeast across O'Brien County, causing much damage along its path. The tornado caused only slight damage and did not develop into a destructive storm at any point along its path which was probably 20 miles long.
Orangeburg, S. C.	12	A. m.			1,000	Electrical.	Power lines and installations damaged.
Willow Lake, S. Dak., 15 miles northwest.	12	11 p. m.	15		44,000	Moderate to heavy hail.	Loss in corn; gardens damaged; some stock killed. \$4,000, property damage; \$40,000, crop loss.
Toledo, Ohio., and vicinity.	12			1	2,000	Electrical and heavy rain.	School damaged to the extent of \$2,000, other property damage not estimated. Church, streetcar, and 5 homes also struck. Flood resulting from the heavy downpour stalled all traffic for 1/2 hour in downtown streets; 1 person injured.
Clayton County, Iowa.	12-13	P. m.			30,000	Heavy rain, flood, electrical.	Storm sewer collapsed at McGregor after 4.50 inches of rain had fallen. Barn burned; railroad tracks washed out near McGregor and Monona. Much damage from erosion and local flooding.
Worth and Mitchell Counties, Iowa.	12-13				65,000	Heavy rain, flood, electrical, and wind.	Heavy rains washed fields, bridges, and damaged highways, and caused small streams to overflow. Hay and shocked grain washed away; several fires from lightning; some damage by wind.
Badger, S. Dak., 8 miles west.	13	3-5 a. m.	110		10,000	Light to heavy hail.	Loss in crops.
York County, Pa.	13	4 p. m.				Electrical and wind.	House struck by lightning; power lines down; utilities disrupted.
Vego, Tex.	13	4:30 p. m.	67	0		Tornado.	Small damage; no loss in crops.
Harrisburg, Pa.	13	6:15 p. m.			15,000	Wind and rain.	Fronts of 7 adjoining brick residences destroyed.
Amelia Court House, Va., vicinity of.	13	6:45-8 p. m., eastern war time.	880		1,000	do.	2 small barns destroyed; horse and cow killed; path 1 mile long.
Chester County, Pa.	13	P. m.				Electrical.	Garage burned; warehouse struck.
Venango County, Pa.	13	do.			5,000	Electrical and wind.	Barn burned; house struck by lightning; utilities disrupted; trees blown down; loss to crops.
Washington County, Iowa.	13				10,000	Electrical.	Barn and contents destroyed by fire.
Shallow Water, Kans., vicinity of.	15	4:30 p. m.	14		40,000	Heavy hail.	Much damage to windows and roofs; feed crops destroyed over a large area; chickens killed; path 12 miles long.
Victory to Spring Green, Wis.	15	5-6 p. m.	1-6		70,000	do.	Severe loss in tobacco and lesser damage to corn, tomatoes, cabbage, and vine crops. Number of turkeys killed or injured; crop loss, \$65,000; other damage, \$5,000.
Guffey, Colo.	16					Rain and hail.	Considerable damage to grain and potato crops. Principal damage from hail and flooding.
Cripple Creek, Colo.	17	3 p. m.	12			Hail.	Roofs damaged; victory gardens ruined; path 5 miles long.
New Prospect, S. C.	17	3 p. m.			4,000	Thunderstorm and hail.	Loss in crops, \$3,000; property damage, \$1,000.
Cheraw, S. C.	17	5:15 p. m.			500	Thunderstorm.	Minor property damage.
Defiance County, Ohio.	19	P. m.	100	0	100,000	Tornado.	Barn, garage, silo, and other buildings leveled. 2,000 trees in a 65-acre tract of woodland felled. No injuries reported; hundreds of chickens and some livestock killed.
Dawson County, Mont.	20		12		50,000	Heavy hail.	Loss in crops 80 to 100 percent; hail piled to depth of 6 inches in places; path 15 miles long.
Cherokee County, Iowa.	21	9 p. m.			1,000	Hail.	Loss in crops.
Chickasaw County, Iowa.	23				10,000	Electrical.	Barn destroyed by fire.
Mitchell County, Iowa.	24	9:30 p. m.			3,500	do.	Barn burned.

SEVERE LOCAL STORMS, AUGUST 1943—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Chouteau County, Mont.	24	11 p. m.	1 6-15		40,000-50,000	Hail	Much loss in wheat, flax, and oats; some property damage; path 20 miles long.
Powder River County, Mont.	25	4:30 p. m.	1 3-4		2,500	do.	Loss in wheat and alfalfa seed crops; path 25 miles long.
Mitchell County, Iowa	25				500	Electrical	55 pigs killed by lightning.
Butte Village, Nebr.	26		440		1,000	Straight-line-wind	Several large trees uprooted and plate-glass windows broken; chimney and small buildings damaged.
Montvale, Va.	27	4 p. m. eastern war time.			5,000	Wind, electrical	Farm truck burned; 2 barns and considerable feed destroyed; 10 cattle killed; man injured when barn collapsed.
Utleyville, Colo.	27					Rain and hail	Much loss to crops, some totally destroyed by hail and flooding.
Butte, Nebr.	28	5:30 a. m.	134		2,000	Squall	Trees uprooted; building blown over.
Colby, Kans.	28	5:25-6:40 p. m.	13		10,000	Heavy hail	Leaves of corn and sorghum crops shredded. Truck crops almost completely destroyed. Loss entirely to crops; path 3 miles long.
Little Mountain, S. C.	28				1,000	Electrical	Barn with feed and farming implements burned.
Marlin, Tex.	29	4:30 p. m.	12		11,000	Wind	\$10,000 crop loss, principally cotton; \$1,000 property damage.
Rockdale, Tenn.	29	5:01 p. m.	500		10,000	do.	Property damaged.

1 Miles instead of yards.

SOLAR RADIATION AND SUNSPOT DATA FOR AUGUST 1943

[Solar Radiation Investigations Section, I. F. HAND in charge]

SOLAR RADIATION OBSERVATIONS

Explanations of the tables and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the January 1942 REVIEW, page 20; a list of pyrliometric stations is also given in the REVIEW for January 1943, page 12.

TABLE 1.—Solar radiation intensities during August 1943

[Gram-calories per minute per square centimeter of normal surface]

Madison, Wis.

Date	Sun's zenith distance										Local mean solar time
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	Air mass										
	A. M.					P. M.					
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
August 5	mb.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mb.
August 6	18.3	0.47	0.50	0.81	1.04	1.35	1.26				14.2
August 10	15.8	.70	.79	.95	1.08	1.30					15.8
August 14	15.8	.74	.84	.94	1.14	1.39					11.4
August 16	14.2	.76	.87	.98	1.15	1.38					15.3
August 17	12.3	.76	.87	.98	1.15	1.42					13.7
August 18	10.6	.80	.92	1.04	1.21	1.44					9.5
August 19	11.4	.69	.80	.95	1.13	1.28					8.1
August 24	22.6	.49	.64	.86	1.11						12.0
August 30	17.0	.55	.64	.74	.87						24.2
Means		.68	.73	.87	1.04	1.33					22.6
Departures		-.01	-.05	-.04	+.01						

Lincoln, Nebr.

August 9	23.4				1.38	1.06	0.86	0.74	0.60		26.0
August 17	10.8			1.24	1.44		.94	.69			10.8
August 18	11.5					1.12	.90	.77	.69		10.8
August 20	19.0			1.19	1.33	.97	.69	.53	.45		20.6
August 23	19.0			1.12	1.33	.97					20.6
August 25	18.3				1.25	.86	.69	.58			23.4
August 27					1.52	1.06	.82	.69			17.2
Means					1.18	1.37	1.01	.82	.67	.61	
Departures					+.09	+.06	-.05	-.07	-.02		

*Extrapolated.

TABLE 1.—Solar radiation intensities during August 1943—Con.

Blue Hill, Mass.

Date	Sun's zenith distance										Local mean solar time
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	Air mass										
	A. M.					P. M.					
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
August 1	mb.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mb.
August 2	18.4	0.35	0.59	0.86	1.06						19.0
August 6	21.1		.73	.84	.92		1.07		0.83	0.74	19.7
August 7	15.9	.77	.84	.92	.96						14.8
August 15	12.7	.84	.92		1.14		1.09		.78	.70	11.4
August 16	14.7	.85	.95	1.06	1.19						17.0
August 17	14.2	.76					1.04	0.87	.76	.66	17.0
August 18	19.0								.90	1.81	16.4
August 19	13.2	.64	.76	.89	1.04						15.3
August 20	14.7	.80	.92	1.02	1.16						13.7
August 21	13.2	.71	.83	1.00	1.13				.80	.71	12.7
August 22	13.7	.65	.78								14.7
August 23	17.6						.78	.56	.39	.31	12.3
August 24	15.9	.22	.29	.43	.69		.66	.50	.36	.27	19.0
August 25	20.3	.17	.25	.31	.55						21.1
August 26	20.3	.34	.51				1.06		.73	.64	19.0
August 28	19.0									.85	12.3
August 29	16.0								.83	.72	14.2
August 30	16.4	.80	.90	1.02	1.15		1.16	1.05	.97	.87	14.7
August 31	16.4	.55	.68	.84	1.05					.57	15.3
Means		.60	.69	.83	1.01		.96	.75	.73	.65	
Departures		-.06	-.10	-.06	-.04		-.06	-.09	+.04	+.05	

Albuquerque, N. Mex.

August 1	16.6	0.75	0.84	0.98	1.16		1.13				12.2
August 2	13.6		.80	.92	1.11	1.45					13.2
August 3	15.9				1.11	1.46					15.2
August 4	16.9	.71	.82	.92	1.11		1.17				15.2
August 6	15.9				1.14		1.18	0.90	0.85		12.2
August 7	15.2				1.16	1.47					12.2
August 25	14.9	.80	.88	1.03	1.21	1.48					14.9
August 28	16.6				1.21	1.39					15.2
August 29	16.6	.83	.93	1.05	1.21	1.46					13.6
August 31	16.6	.80	.93	1.07	1.23		1.27				6.4
Means		.78	.87	1.00	1.19	1.45	1.19	.99	.85		
Departures		-.01	-.02	-.01	+.02	+.05	+.01	(-.06)	(-.04)		

TABLE 2.—Daily totals and weekly means of solar radiation (direct + diffuse) received on a horizontal surface
[Gram-calories per square centimeter]

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR
AUGUST 1943—Continued

Date	East- ern stand- ard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate qual- ity	Observatory
			Dif- fer- ence in longi- tude	Longi- tude	Lat- tude	Dis- tance from center of disk				
1943 August 9	A 10 37	7601 7599 7600	-68 +3 +87	12 83 167	-5 +12 +9	68 7 87	194 170 24	1 1 2	VG	U.S. Naval
				(80)	(+6)		388	4		
10	12 9	7601 7599	-55 +17	11 83	-4 +12	57 19	145 170	1 1	F	Do.
				(66)	(+6)		315	2		
11	11 6	7601 * 7599	-41 +27 +30	13 81 84	-4 +7 +12	43 27 30	121 12 145	4 1 1	VG	Do.
				(54)	(+6)		278	6		
12	10 51	7601 7599	-28 +43	12 83	-4 +12	30 43	109 121	3 1	VG	Do.
				(40)	(6)		230	4		
13	12 9	7602 7602 7601 7599	-85 -81 -15 +57	302 306 12 84	+8 +11 -4 +11	85 81 19 57	24 145 121 97	2 1 3 1	VG	Do.
				(27)	(+7)		387	7		
14	11 10	7602 7602 7601 7599	-71 -68 -1 +69	303 306 13 83	+7 +11 -4 +11	71 68 11 69	24 97 121 97	4 1 3 2	VG	Do.
				(14)	(+7)		339	10		
15	11 4	7602 7602 7601	-58 -55 +12	303 306 13	+7 +11 -4	58 55 16	12 73 97	2 1 1	G	Do.
				(1)	(+7)		182	4		
16	11 35	7602 7601	-41 +26	306 13	+11 -5	41 29	73 97	3 1	F	Do.
				(347)	(+7)		170	4		
17	10 36	7604 7602 7602 7603 7601	-73 -32 -28 -18 +39	262 303 307 317 14	-2 +8 +11 -7 -5	73 32 28 23 41	12 48 61 12 23	3 10 2 4 1	VG	Do.
				(335)	(+7)		206	20		
18	11 27	7604 7602 7602 7603 7601	-58 -19 -14 -3 +53	263 302 307 318 14	-2 +8 +11 -7 -5	59 19 14 15 55	12 36 61 12 73	1 7 1 3 1	G	Do.
				(321)	(+7)		194	13		
19	10 57	7604 7605 7602 7602 7603 7601	-44 -22 -6 -1 +10 +67	264 286 302 307 318 15	-2 -6 +8 +11 -7 -5	46 25 6 4 12 67	24 12 36 61 12 73	3 2 4 1 3 2	VG	Do.
				(308)	(+7)		218	15		
20	10 38	7604 * 7605 7605 7602 7601	-30 -22 -9 -7 +13 +81	265 273 286 288 308 16	-2 +2 -6 -6 +11 -5	32 23 16 14 13 81	12 12 24 36 48 36	2 2 2 4 1 1	F	Do.
				(295)	(+7)		168	12		
21	11 23	7604 7605 7602	-15 +5 +26	266 286 307	-2 -6 +11	10 14 26	6 73 34	2 10 2	G	Do.
				(281)	(+7)		113	14		
22	11 3	7606 7605 7607 7602	-42 +19 +37 +39	226 287 305 307	-15 -6 +4 +11	40 23 38 39	12 12 12 16	2 2 5 1	G	Do.
				(268)	(+7)		52	10		
23	11 0	7606 7602	-28 +52	227 307	-16 +11	37 52	24 12	7 1	G	Do.
				(255)	(+7)		36	8		
24	10 37	7606	-14	228	-16	27	24	6	VG	Do.
				(242)	(+7)		24	6		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR
AUGUST 1943—Continued

Date	East- ern stand- ard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate qual- ity	Observatory
			Dif- fer- ence in longi- tude	Longi- tude	Lat- tude	Dis- tance from center of disk				
1943 August 25	A 10 23								G	Mt. Wilson
26	9 9				No spots				G	Do.
27	13 12	7610	+23	226	-16	33	97	8	F	U. S. Naval
				(301)	(+7)		97	8		
28	13 46	7610	+38	225	-16	44	121	12	F	Do.
				(187)	(+7)		121	12		
29	9 11	7610	+51	228	-15	56	73	8	G	Mt. Wilson
				(177)	(+7)		73	8		
30	10 42	7610	+65	228	-15	68	24	3	G	U. S. Naval
				(163)	(+7)		24	3		
31	9 1				No spots				VG	Mt. Wilson

Mean daily area for 31 days=164

*Not numbered.

VG=very good; G=good; F=fair; P=poor.

PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR JUNE
1943

[Based on observations at Zurich, except as noted. Data furnished through the courtesy of Prof. W. Brunner, Swiss Federal Observatory, Zurich, Switzerland]

June 1943	Relative numbers	June 1943	Relative numbers	June 1943	Relative numbers
1	9	11	8	21	0
2	7	12	8	22	0
3	0	13	18	23	Mc 10
4	0	14	a 18	24	13
5	0	15	14	25	10
6	0	16	18	26	10
7	0	17	* 15	27	8
8	d 16	18	7	28	7
9	* 8	19	0	29	0
10	8	20	7	30	0

Mean, 30 days=7.3

*Observed at Locarno.

a=Passage of an average-sized group through the central meridian.

b=Passage of a large group through the central meridian.

c=New formation of a group developing into a middle-sized or large center of activity; E, on the eastern part of the sun's disk; W, on the western part; M, in the central-circle zone.

d=Entrance of a large or average-sized center of activity on the east limb.

PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR JULY
1943

[Based on observations at Zurich. Data furnished through the courtesy of Prof. W. Brunner, Swiss Federal Observatory, Zurich, Switzerland]

July 1943	Relative numbers	July 1943	Relative numbers	July 1943	Relative numbers
1	0	11	28	21	0
2	0	12	30	22	8
3	0	13	b 32	23	0
4	0	14	21	24	Mc 8
5	0	15	19	25	12
6	0	16	17	26	12
7	d 8	17	14	27	d 17
8	16	18	13	28	21
9	34	19	9	29	19
10	32	20	0	30	16
				31	8

Mean, 31 days=12.7

a=Passage of an average-size group through the central meridian.

b=Passage of a large group through the central meridian.

c=New formation of a group developing into a middle-sized or large center of activity; E, on the eastern part of the sun's disk; W, on the western part; M, in the central-circle zone.

d=Entrance of a large or average-sized center of activity on the east limb.

Chart I. Departure ($^{\circ}\text{F.}$) of the Mean Temperature from the Normal, and Wind Roses for Selected Stations, August 1943

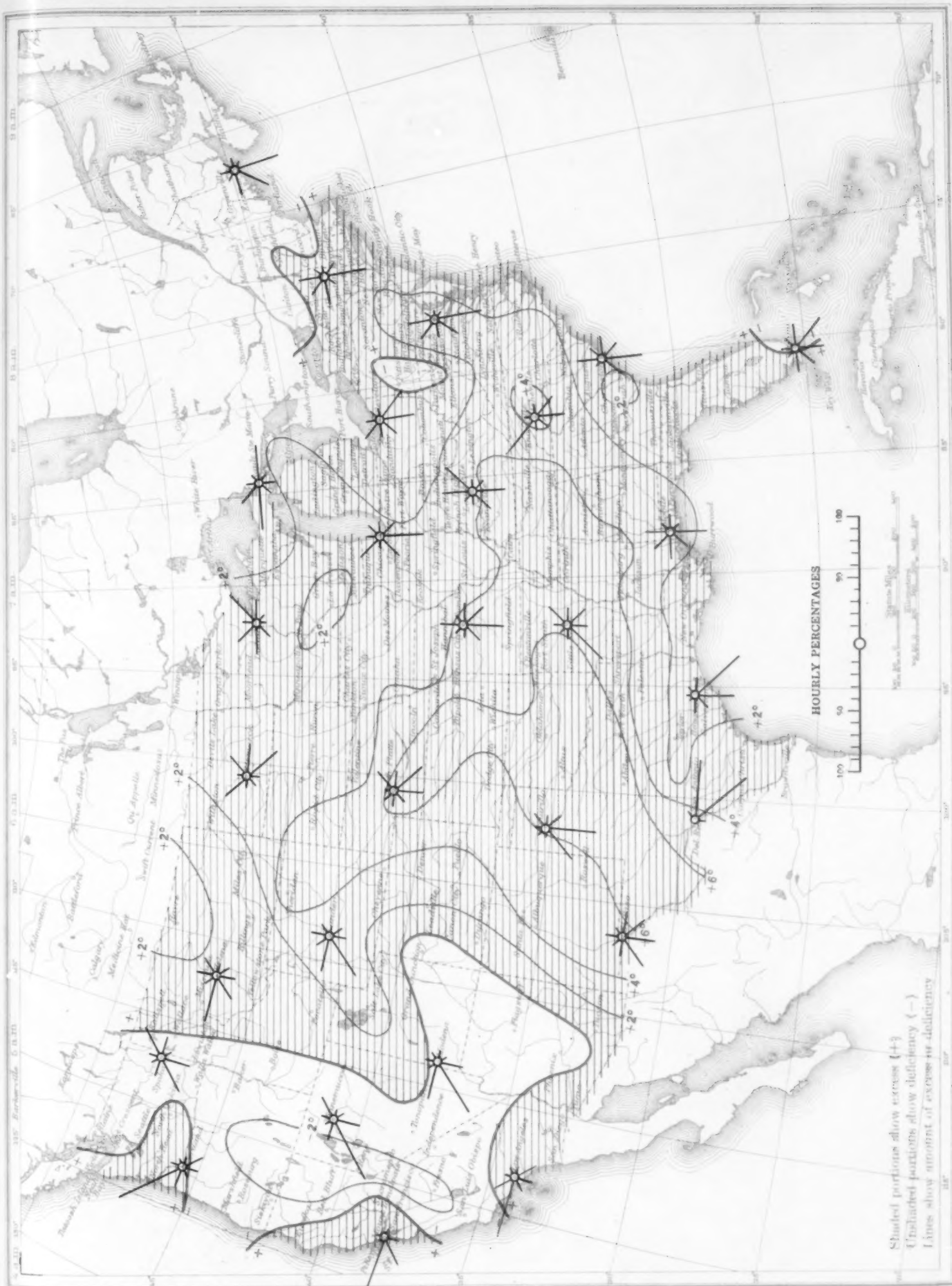
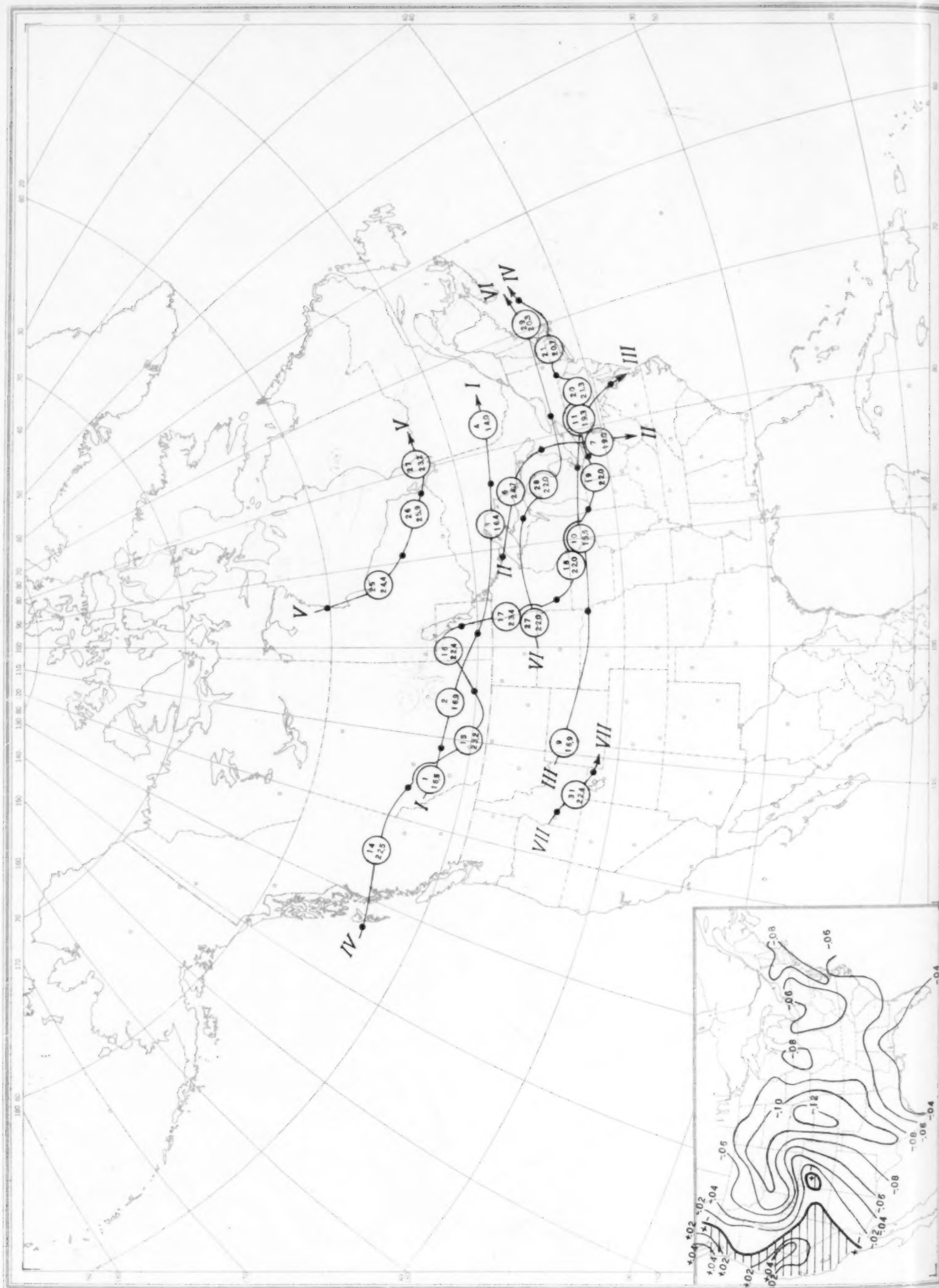


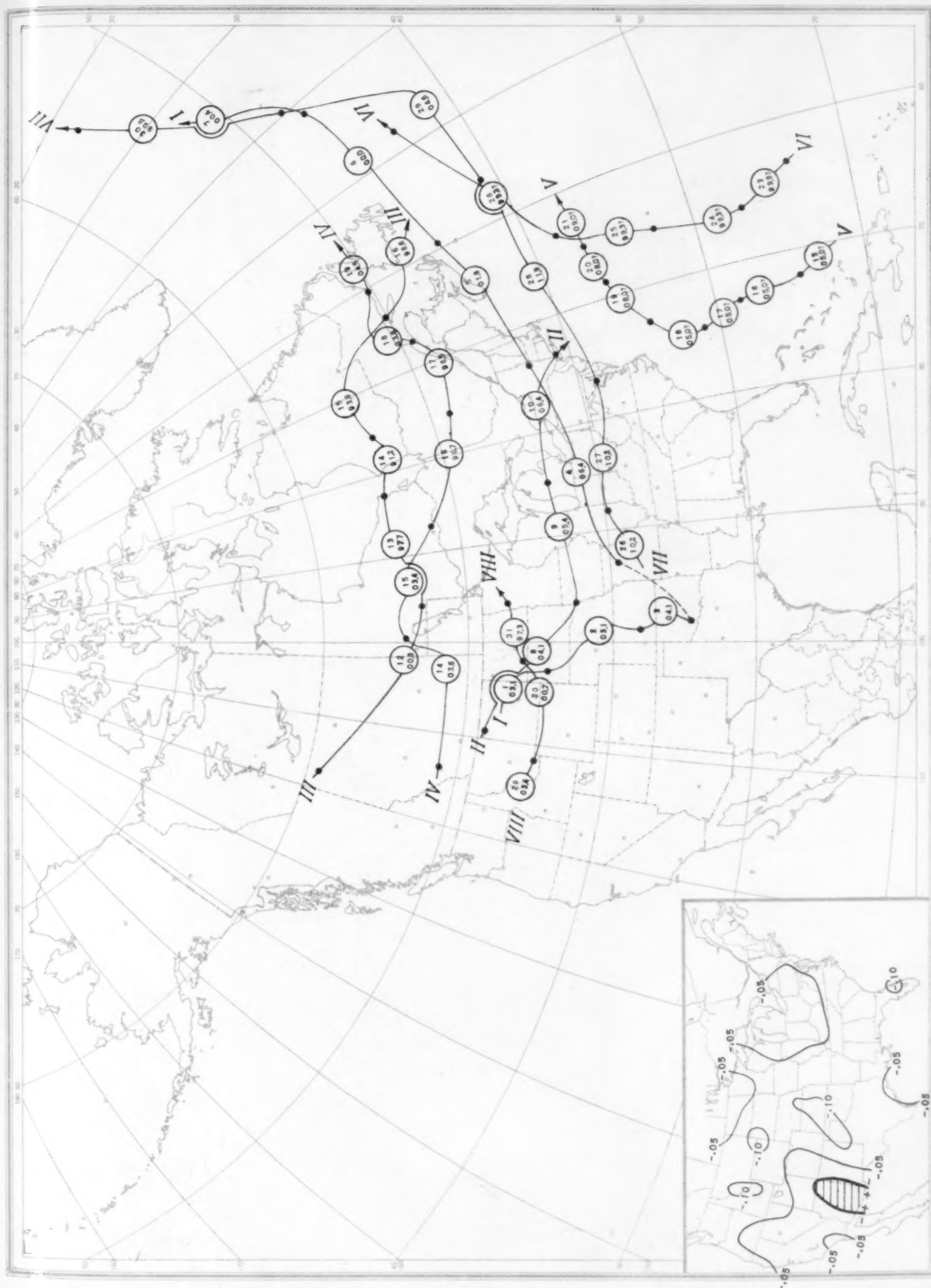
Chart II. Tracks of Centers of Anticyclones, August 1943. (Inset) Departure of Monthly Mean Pressure from Normal



Circle indicates position of anticyclone at 7:30 a. m. (76th meridian time), with barometric reading. Dot indicates position of anticyclone at 7:30 p. m. (75th meridian time)

Chart III. Tracks of Centers of Cyclones, August 1943. (Inset) Change in Mean Pressure from Preceding Month

Chart III. Tracks of Centers of Cyclones, August 1943. (Inset) Change in Mean Pressure from Preceding Month



Circle indicates position of cyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 7:30 p. m. (75th meridian time).

Chart IV. Percentage of Clear Sky Between Sunrise and Sunset, August 1943

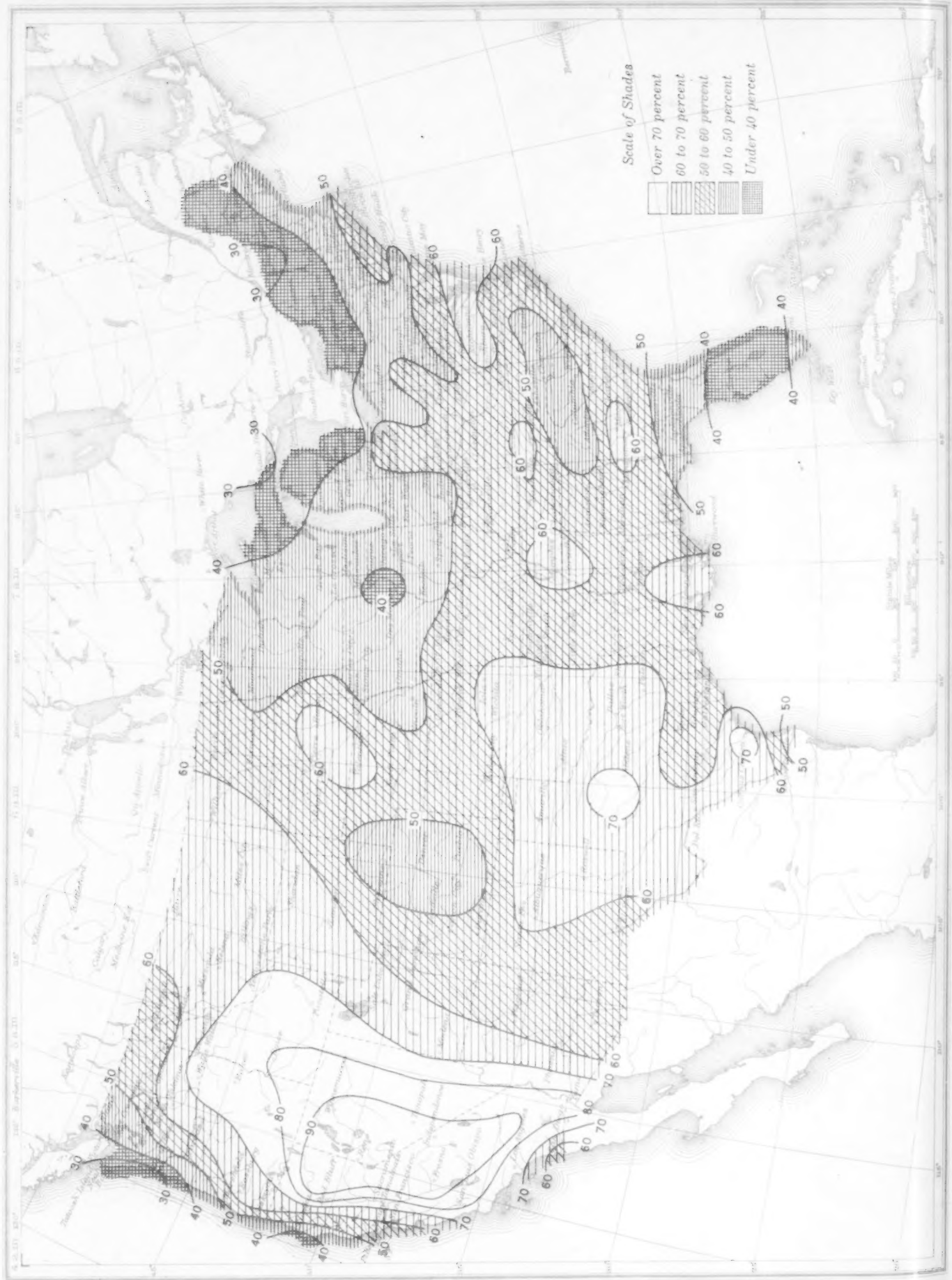


Chart V. Total Precipitation, Inches, August 1943. (Inset) Departure of Precipitation from Normal

Chart V. Total Precipitation, Inches, August 1943. (Inset) Departure of Precipitation from Normal

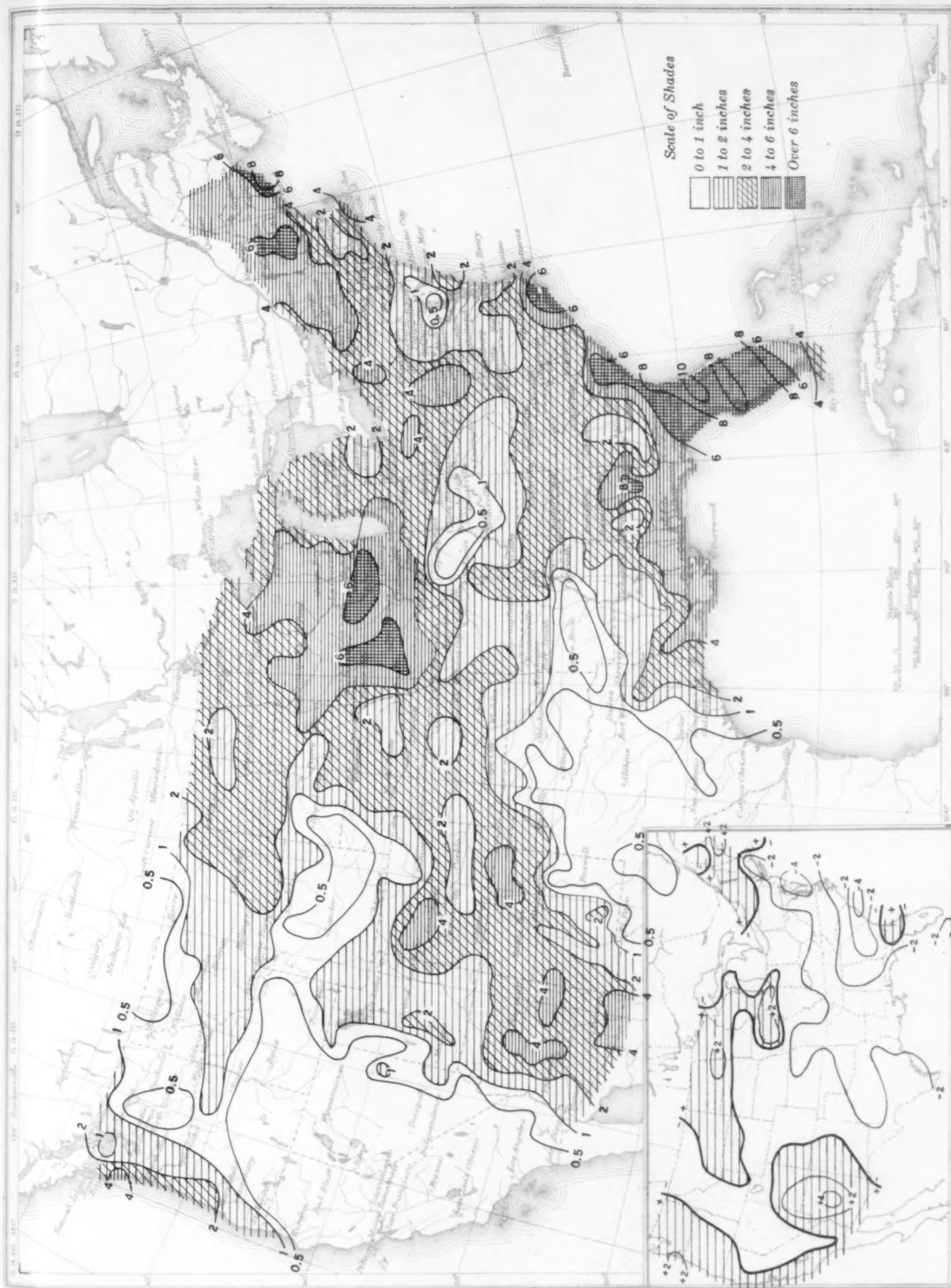


Chart VI. Isobars at Sea Level and Isotherms at Surface; Prevailing Winds, August 1943

